International Journal of Gerontology 10 (2016) 223–226

Contents lists available at ScienceDirect

International Journal of Gerontology

journal homepage: www.ijge-online.com

Original Article

Geriatric Otolaryngologic Emergencies at a Teaching Hospital in Taiwan☆

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ARTICLE INFO

Article history:
Received 5 August 2015
Received in revised form
6 October 2015
Accepted 19 October 2015
Available online 9 November 2016

Keywords:
geriatric patient,
otolaryngology,
emergency room,
epistaxis

SUMMARY

Background: Many diseases are more common in older people than in younger people, and it may be more difficult to make a diagnosis because older patients often have nonspecific symptoms. The purpose of this study was to analyze the geriatric patients treated in an otolaryngology emergency room at a Taiwanese teaching hospital over a 5-year period.

Methods: A retrospective review was performed on patients older than 18 years of age who presented in otolaryngology emergency rooms from January 2010 to December 2014. A total of 4101 patients were enrolled in this study. Patients aged older than 65 years of age were defined as the elderly group. The retrieved data incvluded age, gender, clinical presentations, and treatment modalities for further analysis.

Results: A total of 502 patients (12.2%) were included in the elderly group. There were 287 males and 215 females ranging from 65 to 100 years of age with mean age of 75.7 ± 7.6. The most common need was pharyngolaryngology ($n = 274$; 54.6%) followed by otology ($n = 128$; 25.5%), rhinology ($n = 77$; 15.3%), and head and neck surgery ($n = 23$; 4.6%). Acute upper respiratory tract infection was the most frequent diagnosis. Foreign bodies were mostly found in the throat followed by the ears. Most patients with epistaxis sustained anterior nasal septum bleeding. More than 65% of the patients (335/502; 66.7%) were true emergencies.

Conclusions: The non-emergent disease, acute upper respiratory tract infection was the most frequent diagnosis. Although geriatric patients had a variety of medical conditions, most can be managed with a conservative treatment strategy.

1. Introduction

The future of old age in the twenty-first century will be dynamic because of major changes in nutrition, hygiene, and medical conditions. Geriatric illnesses and injuries are common clinical conditions encountered in otolaryngologic emergencies. Many constitutional and immune changes are associated with aging—these are liable for increasing the severity of diseases in the elderly. Furthermore, some comorbid conditions may alter disease presentation, and cognitive impairment may make it difficult for geriatric patients to provide an accurate history. Older patients often have nonspecific symptoms with difficulty giving an accurate diagnosis. The challenges of the elderly patients for the physician in the emergency room have been discussed for years[1]. However, the epidemiology of geriatric otolaryngologic emergencies has rarely been studied. The present study was aimed to clarify the clinical features, etiology, and treatment modalities of the geriatric patients treated at an otolaryngologic emergency room in a Taiwanese teaching hospital.

2. Materials and methods

The medical records of patients older than 18 who visited our otolaryngologic emergency room between January 2010 and December 2014 were retrospectively reviewed. All patients

☆ Conflict of interest: All contributing authors declare that they have no conflicts of interest.

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http://dx.doi.org/10.1016/j.ijge.2015.10.011

received a comprehensive diagnostic procedure including medical history and physical examination. The patients with referrals from other departments, returns, or without completion of diagnosis and treatment procedures in the otolaryngologic emergency room were excluded from this study. A total of 4101 patients were included in this study. Patients aged older than 65 years of age were defined as the elderly group. Acute upper respiratory tract infection, temporomandibular joint inflammation, tinnitus, impacted cerumen, and allergic rhinitis were not considered to be true emergencies.

The patient age, gender, diagnosis, and treatment modalities were collected. Categorical variables were presented as percentages and analyzed using the Chi-squared test. A p value less than 0.05 was considered to be statistically significant. All statistical analyses were performed using SPSS version 17.0 for Windows (SPSS, Inc., Chicago, Illinois). The Institutional Review Boards at Kaohsiung Armed Forces General Hospital in Kaohsiung approved the study.

3. Results

There were 502 patients older than 65 years of age enrolled including 287 males (57.2%) and 215 females (42.8%) with a male:female ratio of 1.3:1. The mean age was 75.7 ± 7.6 ranging from 65 to 100. The most common etiology was infectious disease ($n = 231$; 46.0%) followed by non-infectious disease ($n = 138$; 27.5%), foreign body ($n = 129$; 25.7%), and trauma ($n = 4$; 0.8%). About two thirds of the patients (335/502; 66.7%) were true emergencies. No mortality was observed in our study. Demographic characteristics of elderly group and adult group were given in Table 1. In the elderly patients, there were 274 patients (54.6%) related to pharyngolaryngology, 128 (25.5%) related to otology, 77 (15.3%) related to rhinology, and 23 (4.6%) related to head and neck surgery (Table 2).

Of the 274 patients related to pharyngolaryngology, the most frequent diagnosis was acute upper respiratory tract infection (141/274; 51.5%), and the second was foreign body ingestion (121/274; 44.2%). The most common foreign body ingestion was fish bone ($n = 114$; 94.2%) followed by dentures ($n = 3$; 2.5%), duck bone ($n = 2$; 1.7%), chicken bone ($n = 1$; 0.8%), and squid ($n = 1$; 0.8%) (Table 3). For the location of the 114 patients with foreign body ingestion, the most commonly affected site was the oropharynx ($n = 77$; 63.5%) followed by esophagus ($n = 24$; 19.8%), hypopharynx ($n = 18$; 15.0%), and larynx ($n = 2$; 1.7%).

Of the 128 patients related to otology, dizzy patients ($n = 43$; 33.6%) were the most common—17 (39.5%) were central vestibular disorders, 16 (37.2%) were non-vestibular disorders, and 10 (23.3%) were peripheral vestibular disorders (Table 4). Benign paroxysmal positional vertigo was diagnosed in 5 (11.6%) of the dizzy patients. Of the 8 ear foreign bodies, insects ($n = 4$; 50.0%) were the most common followed by nonmetallic objects ($n = 3$; 37.5%), and metallic objects ($n = 1$; 12.5%) (Table 5).

Of the 77 patients related to rhinology, epistaxis was the most frequent diagnosis ($n = 60$; 77.9%) followed by acute rhinosinusitis ($n = 12$; 15.6%), allergic rhinitis ($n = 3$; 3.9%), nasal trauma ($n = 1$; 1.3%), and nasal cellulitis ($n = 1$; 1.3%). With respect to the locations of the 60 patients with epistaxis, the most frequent lesion was the anterior nasal septum ($n = 45$; 75.0%), followed by inferior

Table 1
Comparison of the characteristics in the elderly and adult groups.

	Elderly ($n = 502$)	Adult ($n = 3599$)	p value
Gender			
Male	287 (57.2%)	2262 (62.9%)	0.014[a,*]
Female	215 (42.8%)	1337 (37.1%)	
Age in years	75.7 ± 7.6	35.4 ± 14.0	<0.001[b,*]
Etiology			
Infectious disease	231 (46.0%)	2479 (68.9%)	<0.001[a,*]
Non-infectious disease	138 (27.5%)	529 (14.7%)	
Foreign body	129 (25.7%)	554 (15.4%)	
Trauma	4 (0.8%)	37 (1.0%)	
Emergency			
Yes	335 (66.7%)	2702 (75.1%)	<0.001[a,*]
No	167 (33.3%)	897 (24.9%)	

[*] Statistically significant with $p < 0.05$.
[a] Chi-square test.
[b] Student's t test.

Table 2
Diagnosis of geriatric otolaryngologic emergencies according to specialty ($n = 502$).

Diagnosis	n (%)
Pharyngolaryngology	**274 (54.6)**
Acute upper respiratory tract infection	141 (28.1)
Foreign body ingestion	121 (24.1)
Peritonsillar abscess	5 (1.0)
Acute tonsillitis	4 (0.8)
Temporomandibular joint inflammation	2 (0.4)
Acute epiglottitis	1 (0.2)
Otology	**128 (25.5)**
Dizziness	43 (8.5)
Acute otitis externa	21 (4.2)
Tinnitus	19 (3.8)
Acute otitis media	17 (3.4)
Foreign body in the ear	8 (1.6)
Sudden sensorineural hearing loss	6 (1.2)
Acute perichondritis	5 (1.0)
Auricular trauma	3 (0.6)
Facial nerve palsy	3 (0.6)
Impacted cerumen	2 (0.4)
Preauricular fistula with abscess	1 (0.2)
Rhinology	**77 (15.3)**
Epistaxis	60 (11.9)
Acute rhinosinusitis	12 (2.4)
Allergic rhinitis	3 (0.6)
Nasal trauma	1 (0.2)
Cellulitis of nose	1 (0.2)
Head and neck surgery	**23 (4.6)**
Deep neck infection	11 (2.2)
Acute sialadenitis	8 (1.6)
Acute lymphadenitis	2 (0.4)
Postoperative wound infection	2 (0.4)

Table 3
Type and location of foreign body ingestion ($n = 121$).

Type	n (%)	Location	n (%)
Fish bone	114 (94.2)	Oropharynx	77 (63.5)
Denture	3 (2.5)	Esophagus	24 (19.8)
Duck bone	2 (1.7)	Hypopharynx	18 (15.0)
Chicken bone	1 (0.8)	Larynx	2 (1.7)
Squid	1 (0.8)		

Table 4
Diagnosis of dizziness ($n = 43$).

Diagnosis	n (%)
Central vestibular disorders	17 (39.5)
Non-vestibular disorders	16 (37.2)
Peripheral vestibular disorders	10 (23.3)

Table 5
Type of foreign body in the ear ($n = 8$).

Type	n (%)
Insect	4 (50.0)
Nonmetallic	3 (37.5)
Metallic	1 (12.5)

Table 6
Location of epistaxis ($n = 60$).

Location	n (%)
Anterior nasal septum	45 (75.0)
Inferior turbinate	6 (10.0)
Nasopharynx	4 (6.7)
Middle turbinate	3 (5.0)
Vestibule	2 (3.3)

turbinate ($n = 6$; 10.0%), nasopharynx ($n = 4$; 6.7%), middle turbinate ($n = 3$; 5.0%), and vestibule ($n = 2$; 3.3%) (Table 6). There were 55 patients (90.0%) with sustained unilateral epistaxis, and 6 patients (10.0%) with sustained bilateral epistaxis. Thirty-one patients (51.7%) could be managed by conservative local soaking with vasoconstrictive agents, and 29 patients (48.3%) needed nasal packing. None of our epistaxis patients required blood transfusion or surgical intervention. Versus the non-nasal packing group, the nasal packing group had a significantly higher ratio of underlying systemic hypertension (69.0% vs 32.3%, $p = 0.004$) (Table 7).

For the remaining 23 patients related to head and neck surgery, the most frequent diagnosis was deep neck infection ($n = 11$; 47.8%) followed by acute sialadenitis ($n = 8$; 34.8%), acute lymphadenitis ($n = 2$; 8.7%), and post-operative wound infection ($n = 2$; 8.7%).

Most patients were managed successfully with local treatment. Thirty-two patients (6.4%) needed general anesthesia including 19 cases of esophageal foreign bodies (esophagoscopy), 8 cases of deep neck infection (incision and drainage), 3 cases of acute sialadenitis (incision and drainage), and 2 cases of post-operative wound infection (debridement).

4. Discussion

Geriatric health care is increasingly important because of declining birth rates and increasing life expectancy. This geriatric demographic trend also has a great impact on the practice of otolaryngology[2]. In the emergency room, the diagnosis and treatment of geriatric patients are different than those of younger patients. The management of illnesses and injuries in the elderly may be more complex than in younger patients because of more comorbid conditions. Current information regarding this epidemiology mostly derives from studies of Western populations—little is known about this epidemiology in Asians.

Here, acute upper respiratory tract infection (28.1%), foreign body ingestion (24.1%), and epistaxis (11.9%) were the most frequent diseases. Our study contrasts the report by Dagan et al[3] in 2012 who found that balance disorders (23.45%), trauma (15.75%), and epistaxis (13.57%) were the most frequent causes for admission in Israel. The difference may be related to differences in cultural and socioeconomic environments.

Table 7
Comparison of treatment of the epistaxis patients with and without systemic diseases.

	Nasal packing ($n = 29$)	No nasal packing ($n = 31$)	p value[a]
Hypertension			
Yes	20 (69.0%)	10 (32.3%)	0.004*
No	9 (31.0%)	21 (67.7%)	
Diabetes mellitus			
Yes	5 (17.2%)	6 (19.4%)	0.833
No	24 (82.8%)	25 (80.6%)	

*Statistically significant with $p < 0.05$.
[a] Chi-square test.

This study demonstrated that acute upper respiratory tract infection was the most frequent diagnosis. However, it is a non-emergency condition because of spontaneous relief of symptoms, good prognosis and the possibility of management by general medical practitioners. This may be ascribed to the patients' lack of knowledge about acute upper respiratory tract infection and the physicians' insufficient medical education.

In our study, foreign bodies were mostly found in the throat followed by the ears. Fish bones were the most common foreign body in the throat, and insects were the most common foreign body both in the ears. This finding was similar to a previous study[4]. Most of our patients with foreign bodies had them successfully removed without general anesthesia in the emergency room. There were only 19 patients (14.7%) with esophageal foreign body who needed general anesthesia to remove the foreign bodies.

Dizziness is a vexing and common chief complaint in the otolaryngologic emergency room. Peripheral disorders are more likely to affect patients younger than 50 years, and central disorders are more likely to affect older patients[5]. Central vestibular disorders and peripheral vestibular disorders were found in about two fifths (39.5%) and one fifth (23.3%) of geriatric patients with dizziness in this study. Central and peripheral vestibular disorders are not easily differentiated including cerebellar infarcts, which may present as isolated vertigo[6].

In a series by Lammens et al, epistaxis was the most frequent otolaryngologic emergency[7]. Epistaxis constituted 16.7% of the cases presenting for otolaryngologic emergencies[8]. We found a similar prevalence (12.0%) although we only enrolled geriatric patients. Kiesselbach's plexus—the so-called Little's area—is located in the anterior nasal septum and was the most common bleeding site in our study. Most patients are idiopathic, but recurrent and severe epistaxis may have underlying local or systemic factors including nasal tumors, bleeding disorders, etc[9]. Yuksel et al[10] reported that 48.71% of geriatric patients required further cauterization, and 14.52% of geriatric patients required further nasal packing in Turkey. The current study showed that nearly 50% of patients required further nasal packing, and hypertension was higher in the nasal packing group than in the group without nasal packing. In patients with anterior epistaxis, cauterization or anterior nasal packing is usually sufficient but in those with posterior epistaxis, posterior nasal packing is often necessary[11].

Otolaryngologists are inevitably facing an increasing number of geriatric patients with deep neck infection. The treatment strategy of deep neck infection includes keeping the airway patent, empirical broad-spectrum antibiotics, and drainage in the case of a poor response to medical treatment or abscess formation[12]. All patients were treated with a regimen consisting of sufficient fluid hydration and the administration of parenteral antibiotics. Most of these patients (72.7%) underwent additional incision and drainage.

In Kaohsiung Armed Forces General Hospital, an otolaryngologist is on duty for direct patient care in the emergency department 24 hours a day. The geriatric otolaryngologic problem can be immediately evaluated and managed by otolaryngologist on duty. It is important to stress that a systemic approach, differential diagnosis, and meticulous disease treatment will be comprehensive for geriatric patient care.

5. Conclusions

We found that true emergencies accounted for only about two-thirds of the geriatric patients in otolaryngologic emergencies. Otolaryngologists have always seen patients with foreign bodies including the elderly. Most of these bodies can be removed successfully without surgery under general anesthesia. Nasal packing was performed more frequently in the geriatric epistaxis patients

with hypertension, but surgical intervention is usually not required for geriatric patients in the otolaryngologic emergency room.

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